FORGOTTEN FOOD – TREE HAY

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Abstract

The collection of tree leaves for feeding stock, usually from pollards, is now generally confined to poorer and least inhabited areas where subsistence farming and traditional herding still exists, but is believed to have been widespread across Europe until recent times. There is circumstantial evidence that the practice pre-dates the making of hay from herb rich meadows and has been a farming practice for at least six millennia. There is now a resurgence of interest in using this currently untapped resource; this paper provides an overview of the history and management of tree fodder.

The leaf fodder or "tree hay" was stored for feeding to stock during the winter, especially in mountain areas, but was also a vital source of animal feed in periods of drought especially in free draining soils. It was also an insurance against failure of the hay crop due to cold, wet summers. Trees with deeper root systems and mycorrhizal fungal associations can access moisture and nutrients and produce green leaves when other plants have dried up. The leaves may also be richer in nutrients because of this and some tree leaves are known to have medicinal benefits and stock will self-medicate where they have the opportunity.

The cutting of the leaves is carried out when the tree is in full leaf, like meadow hay, from the end of June and through July, when it is richest in minerals and nutrients. Certain types of tree were favoured in different parts of Europe but elm and ash are known for their palatability to animals. In the UK, holly and ivy were especially important for feeding to deer and other stock in the winter and were specially protected by Norman Forest Law as 'vert'.

The way tree branches were cut and the methodology for drying the tree hay appears to vary from region to region but often the branches were packed into tight bundles and tied with twisted willow or hazel twigs. This method has been tested at the Knepp Estate in Southern England and green leaves were still present even after two years.

Introduction

It is our understanding that Humans were originally hunter gatherers. Therefore during the transition to becoming a farmer and before a settler it is reasonable to assume he developed the skills of herding with the domestication of animals, the real beginnings of transhumance. Then as he wandered with his animals and watched their behaviour he would have seen, especially in the warmer regions of Europe, that these animals browsed both trees and shrubs. This was particularly so in the summer months in Mediterranean regions when other vegetation was 'burned off' by the sun and lack of water. In Northern areas however he would have noticed both the browse height of trees and his animals rush to feed on the green foliage from fallen trees or limbs and in the winter bark buds and twigs. The chances are in the summer that any remaining green leaves, allowed to dry, were later found to be very important in winter months.

Figure 1. Cutting tree hay from an ash tree on Hanstead Park Estate, Berkshire, southern England.

Tree hay could be gathered without the need for any tools by simply breaking and tearing tree limbs and twigs, and then gathered for fodder. Interestingly it is difficult to imagine how vegetation could be cut in a natural herb rich meadow without some form of cutting tool. Perhaps this was the first tree hay which presumably, as the method developed, predated meadow hay by as much as millennia. Whilst cutting tree hay is now generally confined to the poorer and least inhabited areas such as in the mountainous regions of Europe it is however more widespread in Mediterranean countries were subsistence farming and attended herding is still carried on, another prehistoric practice continued through historical times virtually unchanged to the present day.

Producing Tree Hay

Generally speaking tree hay is produced by the cutting or breaking of limbs and twigs of deciduous trees and shrubs in full leaf (**Fig. 1**). The ideal tree to start pollarding is over the browse height i.e., over 2.3 m to 3.5 m where the main stem is never more than 19 cm and preferably all sapwood. If the trunk is all sapwood then usually the exposed tissue will callus over completely with new growth from all sides around it's circumference, thus making a 'fist' shape which is called a bolling and is incredibly strong with any subsequent growth being very secure and not liable to break off. When newly cut main stems do not callous over and form a bolling but become a ring of living sapwood any new growth will only have support from the vertical trunk sides and therefore becomes very vulnerable to breaking away. The foliage is then dried, stored and fed to the animals in the winter. It is thought that as with meadow hay, tree hay is cut at the optimum time for the maximum storage of minerals and nutrients in the leaves and twigs which then will remain present with drying.

Whilst the methods of cutting and drying tree hay appear to be very varied across the regions of Europe, sometimes even down to an individual, the basic principles remain the same as most branches vary in length from 60 cm to 2 m. One method was to stack and pack the cut braches into very tight bundles that were tied with twisted ropes of willow or hazel twigs. These were then either stored by drying outside hung above ground and then kept for winter fodder or stored green. In recent trials on the Knepp Castle Estate in southern England (http://www.knepp.co.uk/) when the bundles (faggots) have been stored fresh (green) and stored horizontally under shelter in a tight stack (**Fig. 2**), some of the leaves appeared mouldy. However, many of these faggots of different species of trees and shrubs still had quite green leaves even after a season or two of storage, some even for twenty four months.

Figure 2a. Ash faggots cut in July on the Knepp Castle Estate, southern England. The faggotts were fed to the Estate's longhorn cattle (2b) and Exmoor ponies (2c) eight months later

Tree hay species

It appears that across the temperate regions of Europe the majority of tree and shrub species were used, in fact humans literally used what they had. In more recent times with the arrival of meadow hay, tree hay became especially important as insurance against poor growing seasons for hay making. However, if available, ash (*Fraxinus excelsior*) and elm (*Ulmus minor*) (before its demise) appear to have been the preferred tree species with holly (*Ilex aquifolium*) and ivy (*Hedera helix*) generally cut in severe winters or again after a poor growing season for hay and grazing. Today ash regrowth after cutting to produce hay can be more susceptible to Chalara whilst the regular recutting of any remaining elm can keep its bark thickness to a minimum and thus useless to the Bark Beetle.

As our knowledge of plant communities and their interactions with associated essential micro-organisms increases, it is not unreasonable to expect that trees may have many different mychorrhizal partnerships to those with natural organic herb rich meadows. Therefore these

complex relationships could very well supply the trees and shrubs with a very different range of nutrients and minerals which they can store for a longer term and when given to animals will presumably be of an added benefit. Green islands can be found on the leaves of many species of tree as the tree senesces in the autumn when the minerals and nutrients are withheld by pathogens in the leaf tissue, and cattle appear to actively seek out and eat these leaves (**Figure 3**). Together with herb rich meadows they are also known to have natural beneficial medicinal properties useful for animals and ourselves. Sadly in modern animal husbandry and human health, this is no longer common knowledge.

Figure 3. Cattle preferentially selecting fallen leaves with green islands.

Conclusions

To some people, cutting trees and pollarding to produce products such as tree hay will be seen as labour intensive with high cost and low value for productivity. However, to others it can be seen as continuing an age old part of our cultural and landscape heritage together with the trees ageing process becoming important for the decaying wood communities of fungi, insects and other microorganisms. Also the natural medicinal properties that will appeal to many, add the costs of manmade pharmaceutical products in monetary terms and more importantly the costs and adverse impacts to biodiversity and the environment and tree hay becomes attractive. Include the differing natural minerals, nutrients and perhaps above all the trace elements the fodder contains and it becomes a very persuasive argument especially to the ‘high end’ of the animal food market to such people as horse, rare breeds owners and across wildlife reserves. Not forgetting that tree hay in the past played a significant role as winter food and extra insurance against failure and poor harvests of meadow hay in bad summers.

Acknowledgements

Thanks to Jo Smith (Organic Research Centre, UK) and Jill Butler (Woodland Trust, UK) for editing the extended abstract.